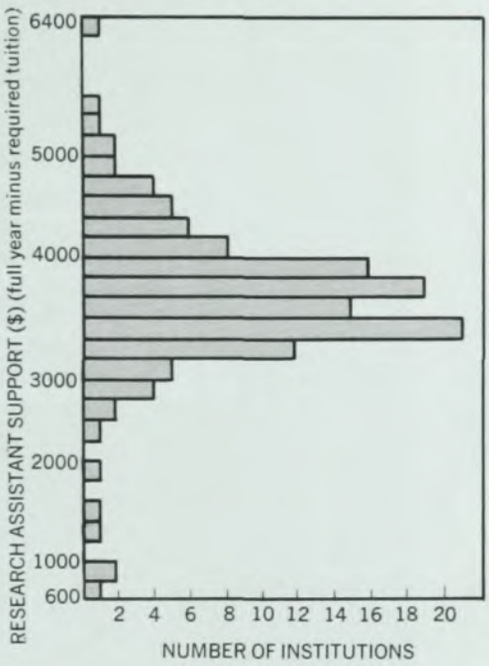
letters

Surveying graduate student support

Over the past fifteen years most graduate students of physics in pursuit of the PhD degree have been able to secure support for their studies either through teaching-assistant or research-assistant appointments or fellowships. I recently sent a questionnaire to 162 PhD-granting institutions of physics throughout the U. S. in an attempt to determine both availability and the stipend levels of these traditional means of support. Some 144 (90%) of the questionnaires were returned. My findings indicate that more than four out of five of the present generation's physics graduate students are able to support their advanced educations by one of these traditional methods. Of those who receive support, 13% do so by means of fellowships, 44% through teaching assistantships and 43% through research assistantships.

An unmarried student in his third year of graduate study was selected as the *typical* student for the purpose of gaining detailed information. For such a student the average level of support for an academic year (9 months) is \$2902 for a teaching assistant and \$2675 for a research assistant. These figures represent dollars available to the typical student described above *after* applicable tuition fees have been paid. (In cases, for example state universities, where tuition charges differ between in state and out of state, *in*-state tuition has been used.) In many cases summer stipends are available, and on a full-year basis (after tuition) we find teaching assistants receive an average of \$3385 and research assistants receive \$3378. The figure displays the spread in support available to research assistants on a full-year basis. Each square stands for one institution reporting a support level within the range indicated beside the line in which the square appears. The highest and lowest support levels are typically accompanied by anomalous living costs. For example, support levels at the University of Alaska are among the highest in the nation, but living costs are also extremely high.

Other facts relating to salary were also obtained. For example only 12% of the respondents indicated that the typical student's salary would depend on the particular advisor he might choose. Among this 12% the average



salary spread available was about \$400. Some 25% of the respondents indicated that paper grading or additional teaching duties could supplement the normal stipend. An average of \$3.00 per hour was indicated for these additional duties.

Full-year salary information was also requested for postdoctoral positions. Postdoctoral salaries range from below \$5000 (which I suspect represents a holding-pattern position) to a high of \$12 500. The middle postdoctoral salary is \$10 000.

A limited number of copies of a report that describes the results of this survey primarily in the form of histograms is available. Requests for copies of this report should be addressed to me at the Department of Physics, University of Massachusetts, Amherst, Mass. 01002.

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3-Year postdocs?

I have recently suggested that the American Physical Society look seriously into the possibility of postdoctoral programs that involve three years' work split between two institutions, rather than the conventional one year at a single institution. One variation would be a normal two-year appointment, with a year's leave of absence between the two years to be spent at another institution, possibly abroad. We already have an example of a student coming here next year from MIT who received offers both from us and from Berkeley last year and was interested in coming to both places. Berkeley agreed to give him a year off between his two years, and we agreed to give him a delayed one-year appointment. I have heard of another instance, a postdoc at the National Accelerator Laboratory, who has been given a year off next year to go to CERN, after which he still has a year at NAL. This kind of arrangement appears to be advantageous for all concerned, and it seems worthwhile to investigate ways of generalizing it.

Under the present system of two-year postdoctoral appointments with today's job market, the second year is spent exclusively in job hunting, while the first is spent under pressure to produce for the market. Postdocs are generally afraid to go abroad because of the distance from job possibilities and the difficulty of visiting places that might be interested in personal impressions of a candidate before making offers. The proposed three-year arrangement keeps the candidate off the market for an additional year and gives him more time to learn and broaden his background before having to devote his main efforts to job hunting. It also offers the possibility of spending a year abroad without hurting job possibilities.

For a host institution to offer a two-year appointment spread over a three-year period requires only a delayed budget commitment for the normal postdoc salary. The institution gains a productive first year unencumbered by job worries, and a delayed second year in which job hunting should be easier for both the candidate and the faculty who have to recommend him, because there will be a factor of two in available experience on which to base all evaluation, as well as additional senior physicists who know the candidate from the other institution. The host institution for the second year gains a fruitful postdoc for one year, at the price of a delayed commitment made a year earlier.

The possibility of spending the mid-

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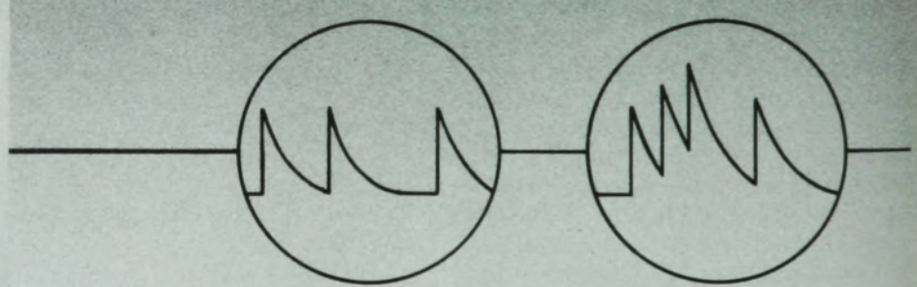

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dle year abroad with an appointment supported by the host institution also takes a budgetary load off American institutions. This does not place an excessive burden on institutions abroad, as many places, including the Weizmann Institute, would be happy to take on additional postdocs under these circumstances.

I do not think that it would be practical to make any formal arrangements through the APS involving two institutions and a candidate. However, publicizing the existence of this kind of program might make it generally acceptable and induce both institutions and candidates to consider it in individual cases.

HARRY J. LIPKIN
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IUPAP on freedom

While the International Union of Pure and Applied Physics provides a variety of services to physicists, many of them might well be provided by other organizations. However, as the principal international agency for physics, it has had a special concern for the free movement of scientists from one country to another. Recently this cause has been sorely tried by new problems.

Over the years, IUPAP has struggled, for example, to insist that no physicist be barred for political reasons from an international conference organized by one of its Commissions. This is usually done by means of refusing visas. While success has been uneven, it has been steadily increasing, and in recent years few cases have been reported. However, few is too many, and at its last General Assembly in Washington, 1972, delegates voted unanimously a re-affirmation of IUPAP principles of free travel, which are similar to those of the International Council of Scientific Unions (ICSU). If it were stated by a conference's host country that visas would be refused for political reasons, IUPAP support for the conference would be withdrawn; if they were refused *de facto* too late for IUPAP to act, its international commissions would be warned against holding further conferences in the country. In 1973 no cases of visa refusal have been reported.

However, there can be harassments. In one 1973 case, following repeated cautions, visas were finally issued to twelve scientists who appeared to have been barred, but very late—too late for six of them to attend. While the letter of the agreement was observed, the spirit was not, and further conferences in the country concerned will require stronger guarantees.

There can also be more delicate problems. At the same conference, it was learned that several nationals of the host country who wished to attend the meeting were prevented from doing so. The Commission chairman, who was present, had worked hard and successfully to surmount the visa problem and now bent his best efforts to what appears to have been, legally, an internal matter. Therefore his interventions, although vigorous, had to be of a private nature and were not successful. We are faced with a new obstacle to the free movement of scientists.

Problems involving internal matters are no less pressing or less urgent than those that involve frontiers. They may not be dismissed or swept under the rug for that reason. However, many years of bitter experience from the United Nations downwards has proven how difficult these problems are and how frustrating it is to pin them down in rules, regulations or sanctions. Many authentic-sounding apolitical reasons can be invoked to cover an act of political discrimination, just as cries of political motivation can arise from disappointed applicants in a travel grant competition. The cause may be clear, but the lawyers are clever.

These questions will be reviewed at the coming IUPAP Executive meeting. However, all physicists involved in international gatherings must be alert to them and exercise their influence to safeguard those freedoms which are essential to science. Freedom of movement is one of the more important, and currently one that is threatened.

LARKIN KERWIN
Secretary-General
IUPAP

EDITOR'S NOTE: We understand that the IUPAP executive meeting has now been held, and the ICSU principles concerning the free circulation of scientists were reaffirmed at that meeting.

Reactor safety questioned

I disagree with the bias of recent articles published in PHYSICS TODAY on the subject of nuclear power in general, and nuclear power-plant safety in particular (August 1973, page 30; May 1972, page 28). These articles, written by men working in the field who could be expected to be pro nuclear power, appear to be largely self-serving. Surely enough controversy has arisen over the question of nuclear-power generation that a qualified member of the opposition could be found to present another viewpoint.

One interesting aspect of the article by Charles Leeper (August, page 30) is the fact that many significant tests re-